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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/523,820	03/13/2000	Michael A. Fetcenko	OBC-99	6627

24963 7590 04/19/2002

ENERGY CONVERSION DEVICES, INC.
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ROCHESTER HILLS, MI 48309

EXAMINER

NGUYEN, CAM N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 04/19/2002

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/523,820

Applicant(s)
Fetcenko et al.

Examiner
Cam Nguyen

Art Unit
1754



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/8/02 (an amendment/response)
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 and 80-89 is/are pending in the application.
- 4a) Of the above, claim(s) 56-70 and 80-89 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

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DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Objections

2. Claims 23, 30, & 46 are objected to because of the following informalities:
 - A. In claim 23, line 2, "fine grained" and "course grained" should be --fine-grained-- and --course-grained-- for consistency with the language of claim 50.
 - B. In claim 30, line 3-4, --and/or nickel-- should be inserted before "alloy".
 - C. In claim 46, line 2, the comma " , " after "Mn" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 102(b)

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 9-10, 15-17, 19-22, 27-28, 30-36, 42-44, 47-49, & 53-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Michalko (U.S. Pat. 3,972,829).

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Michalko discloses a catalyst containing 1 wt.% nickel on an alumina support, the catalyst having the nickel crystallite size of less than 25 Angstroms (see col. 4, Example 1, ln 14-37). The catalytically active metallic component is distributed over the porous carrier material (see col. 6, ln 16-18). Michalko further discloses suitable porous carrier materials are the refractory inorganic oxides including the claimed zirconia and titania support materials (see col. 2, ln 9-23).

Regarding claims 1-6 & 30-35, the claimed metal particle size ranges are met by the teaching of the reference because the disclosed nickel particle size falls within the claimed metal particle size ranges (see Michalko at col. 6, ln 16-18).

Regarding claims 7 & 36, the claimed particulate amount is met by the teaching of the reference because the disclosed nickel amount falls within the claimed range (see Michalko at col. 4, Example 1, ln 14-37).

Regarding claims 9-10 & 30, the claims required the particulate is at least one of nickel metal and the nickel alloy. Michalko teaches a catalyst containing nickel, thus the claims are met.

Regarding claims 17, 19-22, 44, & 47-49, the limitations on the refractory inorganic oxide support materials are met by the teaching of the reference because the reference teaches zirconia and titania are suitable supports (see Michalko at col. 2, ln 9-23).

Regarding claims 27 & 53, applicants claiming the catalyst is compositionally graded within the support and the density of the particulate is graded within the support in the claims, respectively. It is considered the catalyst of the reference has the descriptions as being claimed

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because both Michalko and applicants' catalysts have metallic particles uniformly distributed over the surface of the support material.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8 & 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michalko (U.S. Pat. 3,972,829).

Michalko discloses a catalyst as described above, except for the particles proximity.

While the reference does not indicate that the catalyst of Michalko contains the particulate having the claimed particle proximity, it is considered *prima facie obvious* to one of ordinary skill in the art that the catalytically active metals in the catalyst of Michalko would have the same particle proximity as being claimed, in view of the teaching in the reference that the catalytically active metals are uniformly distributed over the surface of a carrier material (see Michalko at col. 6, ln 16-18). Because the metallic particulates are uniformly distributed over the surface of the support, the distribution distance of the particles from one to another would be expected to be the same.

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7. Claims 11-14 & 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michalko (U.S. Pat. 3,972,829), as applied to claims 1-7, 9-10, 15-17, 19-22, 27-28, 30-36, 42-44, 47-49, & 53-54 above, and further in view of Ovshinsky et al., "hereinafter Ovshinsky", (U.S. Pat. 5,840,440).

Michalko discloses a catalyst as discussed above, except for the following differences.

Regarding claims 11-13 & 38-40, Michalko does not disclose a catalyst containing nickel alloy, and comprising the instantly claimed metals. It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to utilize a known TiNi type alloy containing modifier elements which may be selected from the group consisting of Ni, Cr, Co, Mn, Mo, Nb, Fe, Al, Mg, Cu, Sn, Ag, Zn, Pd, and mixtures or alloys thereof as taught by Ovshinsky (see Ovshinsky at col. 6, ln 43-48) to make a useful catalyst in view of the advantage that the hydrogen storage materials produced by using this TiNi type alloy containing these modifier elements comprising the crystallite size of less than about 200 Angstroms and more particularly less than about 100 Angstroms (see Ovshinsky at col. 6, ln 1-4), which applicants desired. Note that the claimed elements (Co, Mn, Fe, Al, Ti, and Sn) are met by the teaching of the reference because they fall within the listing of suitable modifier elements of the reference.

Regarding claims 14 & 41, Ovshinsky does not indicate that his nickel alloy having an fcc (face-center-cubic) crystal orientation. It is considered the nickel alloy of Ovshinsky would possess the same fcc crystal orientation since both Ovshinsky and applicants' nickel alloys are the same, in view of the same elements disclosed.

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8. Claims 18, 24, 45, & 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michalko (U.S. Pat. 3,972,829), as applied to claims 1-7, 9-10, 15-17, 19-22, 27-28, 30-36, 42-44, 47-49, & 53-54 above, and in further view of Flytani-Stephanopoulos et al., "hereinafter Flytani-Stephanopoulos", (U.S. Pat. 4,729,889).

Michalko discloses a catalyst as discussed above, except for the instantly claimed microcrystalline metal oxide support, and a support containing manganese oxide.

It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized the instantly claimed support materials in order to obtain a catalyst having high H₂S removal efficiency and better sorbent stability catalyst in Michalko, because they are known as useful catalyst supports as shown by Flytani-Stephanopoulos (see Flytani-Stephanopoulos at col 22, claim 7; col 4, ln 19-21; & col 4, ln 67- col 5, ln 3).

9. Claims 23, 26, 50, & 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michalko (U.S. Pat. 3,972,829), as applied to claims 1-7, 9-10, 15-17, 19-22, 27-28, 30-36, 42-44, 47-49, & 53-54 above, and further in view of Hatura et al., "hereinafter Hatura", (U.S. Pat. 5,506,273).

Michalko discloses a catalyst as discussed above, except for the following differences.

Regarding claims 23 & 50, Michalko does not teach a support comprising fine-grained oxides and course-grained oxides. However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized the same support in

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Michalko's catalyst in order to achieve a better catalyst in view of the advantage that the fine grained oxides give smaller catalyst particle size. It is also known in Hatura to use such metal oxide support material in any forms, such as powder spheres, granules, etc. to make a catalyst (see Hatura at col 3, ln 36-42). It is considered *prima facie obvious* to one of ordinary skill in the art that the metal oxide supports in any forms as disclosed by Hatura encompass the claimed course-grained oxides.

Regarding claims 26 & 52, Ward does not disclose a catalyst containing zeolite. However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have incorporated zeolite into the catalyst of Michalko in order to strengthen the physical and mechanical properties of the catalyst, because it is known as a useful catalyst support material as evidenced by Hatura (see Hatura at col 3, ln 39-42).

10. Claims 25 & 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michalko (U.S Pat. 3,972,829), as applied to claims 1-7, 9-10, 15-17, 19-22, 27-28, 30-36, 42-44, 47-49, & 53-54 above, and in further view of Tsou et al., "hereinafter Tsou", (U.S Pat. 5,171,644).

Michalko discloses a catalyst as discussed above, except for the instantly claimed support containing carbon.

It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized the instantly claimed carbon containing support in order to obtain an improved and better functional catalyst in Michalko, because it is known as a useful catalyst support as evidenced by Tsou (see Tsou at col 2, ln 42-43).

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Claim Rejections - 35 USC § 102(b)/103

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 29 & 55 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Michalko (U.S Pat. 3,972,829).

Michalko discloses a catalyst as discussed above, except that the catalyst is not made by the same process as in applicants'.

Even though the catalyst is not made by the same process, the catalyst made is the same as applicants' catalyst. It has been held that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method or production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even the prior art product was made by a different process." See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

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Response to Amendment/Arguments

13. Applicants' amendment/response filed on 4/8/02 has been fully reconsidered, but not deemed persuasive in view of the new grounds of rejections above.

In view of applicants' arguments at the interview on 2/27/02, the arguments over the Ward reference (U.S Pat. 4,686,030) was found persuasive. Therefore, the rejection over the Ward reference has been removed.

Citations

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gangwal et al. (U.S Pat. 5,928,980), Shukis et al. (U.S Pat. 6,200,927 B1), Khare (U.S Pat. 6,274,533 B1), Schneider et al. (U.S Pat. 5,407,886), Manzer et al. (U.S Pat. 6,235,677 B1), Kugler et al. (U.S Pat. 4,273,724), Rivas et al. (U.S Pat. 5,677,257), Kukes et al. (U.S Pat. 4,834,865) are cited for related art.

Conclusion

15. Claims 1-70 & 80-89 are pending. Claims 1-55 are rejected. Claims 56-70 & 80-89 remain withdrawn due to nonelected (distinct) inventions. No claims are allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (703) 305-3923. The

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examiner can normally be reached on M-F from 8:30 am. to 6:00 pm, with alternative Monday off.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 (before finals) and (703) 872-9311 (after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Nguyen/cnn

April 18, 2002



Cam Nguyen

Patent Examiner